International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

MENTAL HEALTH PREDICTION USING MACHINE LEARNING ALGORITHMS

V Basha 1 , Assistant Professor, Department of CSE, **AVN Institute ofEngineering and Technology,**Hyderabad, Telangana, India.

T Sarada 2 ,Assistant Professor, Department of CSE, **AVN Institute ofEngineering and Technology,**Hyderabad, Telangana, India.

ABSTRACT:

An individual's mental health reveals their psychological, mental, and social welfare. It affects what a person will undoubtedly think, feel, or do in a situation. A person can work productively and also reach their full potential with the aid of healthy psychological health. Mental health is important at every stage of life, from childhood to adulthood. Stress and anxiety, social anxiety, clinical depression, obsessive-compulsive disorder, substance addiction, workplace troubles, and personality disorders are just a few examples of the many factors that contribute to mental health and wellbeing concerns that result in mental disease. We gathered information from online datasets that were readily available. For better forecasting, the information has been labeled. To obtain labels, the data is subjected to several artificial intelligence systems. Following the identification of these tags, a model will be created to predict a person's psychological health. Before the algorithm is utilized to create the design, its precision will undoubtedly be assessed. We intended to use category formulas like Nave Bayes, Random Forest, and Choice Tree. Our target market is the working class, specifically people over the age of 18. Once the model is created, it will be integrated into a website so that it can forecast the outcome depending on the information provided by the user's health.

Keywords: Health monitoring, Bayes, Prediction, ML.

1. INTRODUCTION

A person's mental health reflects their attitude and also gives insight into their character as a whole. Inequalities in mind chemistry are the cause of mental illness. Analysis of psychological health is crucial for understanding and recommending treatments for people with mentally drifted conduct. Most people are susceptible to stress, but others also experience anxiety for a variety of reasons. liver-improving drugs that also promise quick recoveries. The diagnosis is a difficult task, and mistake occurs frequently because similar elements

International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

and also symptoms can imply several psychological health and wellbeing issues. For a problem to be resolved successfully, the person must cooperate. Finding psychological problems can be difficult because a misdiagnosis might lead to serious problems. Therefore, sufficient attention must be necessary to accurately identify and address the mental health and wellness issue.

For the sake of our work, we have obtained data from an OSMI (Open Sourcing Mental Illness) survey that is widely available online. In general, the dataset comprises information about functioning people. By raising awareness of mental illnesses linked to the workplace, businesses and employees will primarily benefit. To create a design, we actually used a maker-finding formula. It has been used on a website so that people can learn more about their mental disease. Based on the inputs made, the website displays a possibility and a reference to the user.

A description of the issue

The goal of artificial intelligence is to create systems that get better over time by applying sophisticated analytical and probabilistic techniques. It is thought to be a very useful technique to aid in predicting mental health. It is enabling several scientists to gather important data from the data, offer tailored experiences, and also develop automated smart systems. Future occurrences have been predicted as well as categorised using the widely used formulas in the field of machine learning, such as decision tree algorithm, random forest, logistic regression, and knn classifier.

PURPOSE OF THE JOB

The main goal is to provide a rigorous study, analysis, and summary of the literature on machine learning approaches used to predict, identify, and detect psychological disorder. This essay will also suggest potential directions for further study in this area.

Literature review

One of the most important steps in the software development process is the analysis of existing literature. It is crucial to define the time factor, economics, and company strength before building the device. Once these conditions are met, the next step is to decide which operating system and programming language can be utilised to create the device. The designers require a great deal of outside assistance as soon as the programmers begin to construct the tool. You can find this support online, in publications, or from ageing developers.

Artificial Intelligence Techniques for Staff Members' Stress Forecast outlines machine learning techniques for analysing stress and anxiety patterns in working adults

International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

and limiting factors that have a significant impact on stress and anxiety levels. In support of this, data from the OSMI psychological health research conducted in 2017 on functional experts working in the tech sector was taken into account. Artificial intelligence algorithms used in behavioral modeling for mental wellness. In order to determine the level of psychological wellness in a target group, this paper suggests a variety of device learning algorithms, including logistic regression, support vector machines, decision trees, naive bayes classifiers, and K-nearest neighbour classifiers. First, unsupervised knowing methods were used on the responses obtained from the target team for the designed questionnaire. By calculating the Mean Opinion Score, the tags that were obtained as a result of clustering were confirmed. These collection labels were subsequently used to create classifiers that could predict a person's psychological well-being.

The aforementioned considerations are made before developing the system to create the suggested system. A literature review is a corpus of writing with the goal of evaluating the key aspects of current knowledge. It includes significant results as well as methodological and academic contributions to a given subject. Reviews of literary works serve as supplementary sources; they do not present new or original speculative work. A literary work's endorsement can also be seen as an assessment of an intangible feat.

Existing system:

There are a few systems that question users and then analyse their responses to use chatbots to predict mental illness. Some systems also use picture processing to monitor people's faces and analyse their behaviour in relation to a particular issue to help with more accurate mental illness prediction. The majority of these studies cover both the behavioural and physical aspects of an individual but exclude any occupational issues. As a result, very little research has been done on mental illnesses that are related to the workplace. The majority of these systems focus on the broad features of mental illness. One of the most common parameters to evaluate the outcome is included. On a larger scale, it is difficult to find solutions that focus on the employees and conditions related to their jobs that affect their mental health.

POSITIVE FACTORS OF THE CURRENT SYSTEM

Therefore, there has only been a very little amount of research on mental disorders at work. The majority of these approaches focus on the fundamental components of mental illness. They cover the most common

International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

criteria used to evaluate the outcome. There are few higher-level systems that concentrate on the workers and occupational mental illness.

SUGGESTIVE SYSTEM

With the aim of creating a website where users may enter values into a form and receive information regarding prospective or present mental illness depending on their input, we have actually developed a system. First off, we've really assembled a dataset that is accessible online. The gathered data is analysed and pre-processed. The data includes several tags, like age, gender, distance between home and work environment, previous mental illness, family history, etc. For better forecasting, the information has been labeled. To evaluate the data and find a more precise solution, we used the Choice Tree and Random Forest formulas.

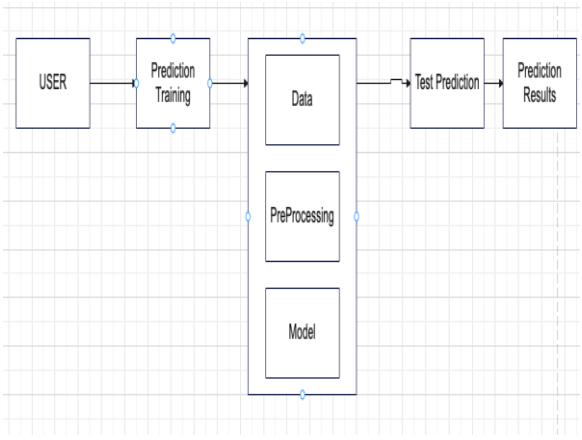
Benefits of the suggested system

Without using any clinical techniques, we have created a model that can predict a person's mental state. The dataset created by monitoring the person over a period of time and using various methal scenario aids to quickly assess the patients.

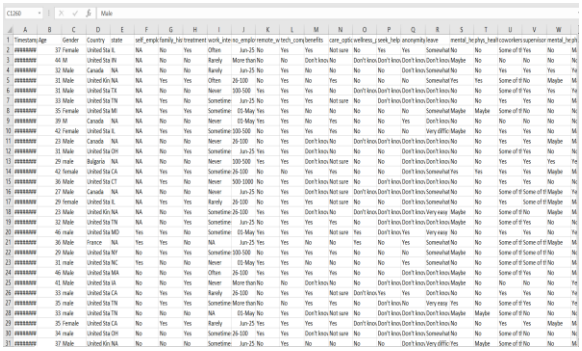
2. AN OVERVIEW OF PROPOSED SYSTEM

Systems design is the process of defining elements of a system like modules, architecture, components and their interfaces and data for a system based on the specified requirements. It is the process of defining, developing and designing systems which satisfies the specific needs and requirements of a business or organization.

SYSTEM ARCHITECTURE



DATA SET:



IMPLEMENTATION:

A decision tree is a non-parametric supervised learning technique for classification and regression (DT). In order to construct a design that predicts the value of a target variable, it is important to find straightforward decision rules derived from the data attributes. You can visualise a piecewise consistent approximation as a tree.

International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

Among the advantages of the chosen trees are:

- Simple to grasp and translate. One may envision trees.
- Needs very little data preparation. The introduction of dummy variables, data normalisation, and the removal of blank values are common requirements for alternative methods. But bear in mind that this module does not allow for the omission of values.
- The cost of employing the tree (that is, anticipating information) rises exponentially as more information components are employed to train it.
- Able to work with data that is both numerical and specialised. However, categorical variables are not currently supported by the scikit-learn implementation. The analysis of datasets with just one type of variable is often the focus of other techniques. For additional information, see algorithms.
- Capable of handling challenges with many outputs.

The white box model is used. If the suggested circumstance is present in a version, boolean logic makes it straightforward to explain the condition. Results in a "black box" version, such as one made by humans, could be more challenging to interpret.

- The ability to validate a version using statistical analysis. This makes it easy to communicate the integrity of the design.

Carries out well even if some of the fundamental assumptions of the real model from which the data were produced are slightly violated.

RESULTS EXPLAINED: Formula Comparisons - The comparison utilising simulation-based results is displayed in the table below. We compare classification error, precision, and accuracy. The random forest design offers the best accuracy, precision, and classification error, according to the table. The most accurate precision is attained by combining many methods with arbitrary woodland. For the aim of detecting whether or not the subject is suffering with a mental illness, the Cofusion matrix gives visualisation of the components that contribute to the form table's minimal inaccurate positive price.

Algorithms	Accuracy	Precision	Classification Error
Decision Tree	0.806878	0.78	0.193
Random Forest	0.812169	0.80	0.18
Logistic Regression	0.796296	0.76	0.20
KNN Classifier	0.804232	0.79	0.195

Fig.1. Accuracy table.

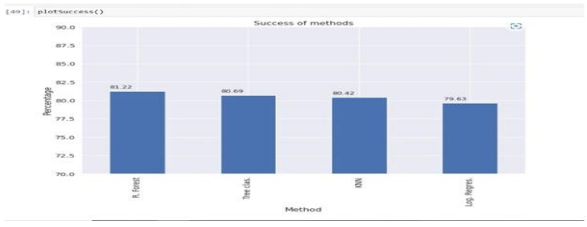


Fig.2. Ratio of successes.

International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

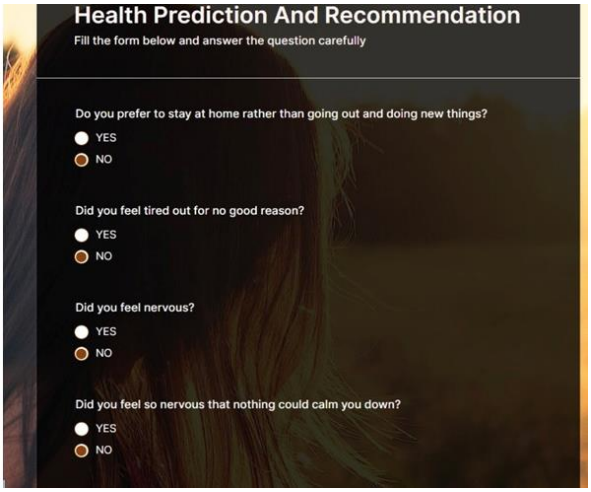


Fig.3. Home page.

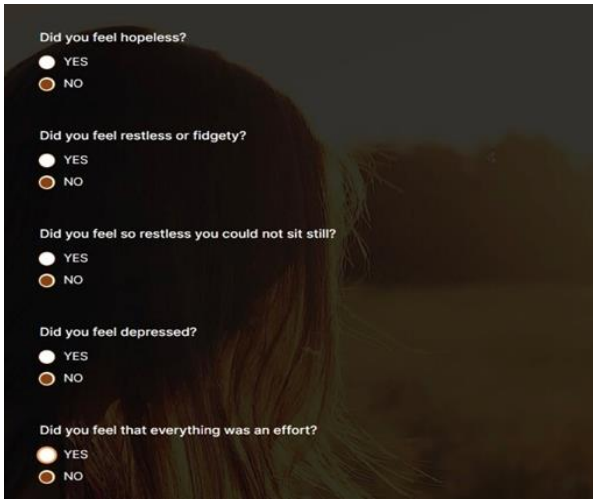


Fig.4. Perdition output

Fig.5. Outcome display.

3. CONCLUSION

The topic of mental health and wellness is one that is currently both sensitive and significant. For living a balanced, healthy life, it is necessary. One's psychological health and wellbeing have an impact on their beliefs, behaviours, and feelings. It might have an impact on a person's productivity and performance. In order to live good social and professional lives, people need to value their mental health more, according to a WHO study. Depression will undoubtedly play a significant role in the global burden of mental illness. People who are afraid to seek others for a diagnosis can use online results forecasts.

Actually, in order to conduct the forecast, we initialized the data. We then trained a design that was subsequently used on our website using the Random Woodland method. We classified the data accurately using Random Woodland in 258 out of 315 cases, with an accuracy of 81 percent. By answering the questions on our page, the user gets the chance to discover the state of their mental health and welfare as well as obtain suggestions. We may conclude that the output and the chance of the illness being mistakenly classified are distant as a result of the precision we were able to achieve.

FUTURE EFFECTS

It is feasible to forecast a specific mental disorder that a person might experience in the future, but this will involve gathering a lot of data.

REFERENCES

1. U. S. Reddy, A. V. Thota and A. Dharun, "Machine Learning Techniques for Stress Prediction in Working Employees," 2018 IEEE International Conference on Computational Intelligence and Computing Research (ICCIC), Madurai, India, 2018, pp. 1-4.

2. M. P. Dooshima, E. N. Chidozie, B. J. Ademola, O. O. Sekoni, I. P. Adebayo, A Predictive Model for the Risk of Mental Illness in Nigeria Using Data Mining, International Journal of Immunology. Vol. 6, No. 1, 2018, pp. 5-16.

3. M. Srividya, M. Subramaniam and B. Natarajan, "Behavioral Modeling for Mental Health using Machine Learning Algorithms" "Journal of Medical Systems" Vol. 42(5):88 May 2018.

4. D.Filip & C. Jesus. (2015). A Neural Network Based Model for Predicting Psychological Conditions International Conference on Brain Informatics and Health 252-261.

5. S. G. Alonso, I. Torre-Díez, S. Hamrioui, M.l López-Coronado, D. C. Barreno, L. M. Nozaleda, and M. Franco. Data Mining Algorithms and Techniques in Mental Health: A Systematic Review. J. Med. Syst. Vol. 42, 9 (September 2018), 1–15

6. Deziel, M., Olawo, D., Truchon, L., &Golab, L. Analyzing the Mental Health of Engineering Students using Classification and Regression. EDM (2013).

7. M. A. Haziq Megat S'adan, A. Pampouchidou and F. Meriaudeau, "Deep Learning Techniques for Depression Assessment," 2018 International Conference on Intelligent and Advanced System (ICIAS), Kuala Lumpur, 2018, pp. 1-5.

8. Tomar, D., & Agarwal, S. (2013). A survey on Data Mining approaches for Healthcare. International Journal of Bio-Science and BioTechnology, 5(5), 241-266.

9. Sandhya P, M. Kantesaria "Prediction of Mental Disorder for employees in IT Industry", International Journal of Innovative Technology and Exploring Engineering (IJITEE), Volume-8 Issue-6S, April 2019.

10. WEKA: https://www.cs.waikato.ac.nz/ml/weka/

11.M. A. Haziq Megat S'adan, A. Pampouchidou and F. Meriaudeau, "Deep Learning Techniques for Depression Assessment," 2018 International Conference on Intelligent and Advanced System (ICIAS), Kuala Lumpur, 2018, pp. 1-5.

12.Tomar, D., & Agarwal, S. (2013). A survey on Data Mining approaches for

Healthcare. International Journal of Bio-Science and BioTechnology, 5(5), 241-266.